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U.S. ARMY CORPS OF ENGINEERS                -----
CECW-EP                                     Superceding
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#### GUIDE SPECIFICATION FOR CONSTRUCTION

Includes Special Change to convert CWGS-01565 to one CEGS system and to renumber the specifications in accordance with the 1995 CSI MASTERFORMAT. (September 1998)

Includes Special Change to remove unused References from Reference Article (December 1998)

Includes Text Adjustment (December 1998)

Includes Changes Through Notice 1 (February 1999)

Includes Special Change (Submittal Paragraph)(June/August 2000)

Includes Major Changes to comply with the Calif Permit (April 2001)

#### Latest Changes Indicated by CHG Tags

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#### SECTION 01356

#### STORM WATER POLLUTION PREVENTION MEASURES 08/96

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NOTES: This guide specification covers the requirements for **temporary construction measures used in implementing the Best Management Practices of the storm water pollution prevention plan as required by a NPDES Permit**. This guide specification should be required for all construction projects that disturbs a land surface area which may become a source for erosion and sediment pollution due to storm water runoff. If the land surface area is 5 acres or more, compliance with the conditions of the General Permit which requires a SWPPP becomes mandatory. If the land surface is less than 5 acres, stormwater pollution prevention is still required (i.e. installation of appropriate erosion and sedimentation BMPs) but submitting an NOI or issuing a SWPPP is not required.

This guide specification must be tailored to meet the requirements of the job and must be tailored to meet the requirements of the permitting authority. Individual states may require prevention measures that differ from the ones specified in this section and, in that case, this guide specification must be tailored to meet those State requirements.

(1) A Notice of Intent (NOI) must be prepared and sent to the appropriate state licensing office or USEPA Regional Office.

(2) After construction is completed, a Notice of Termination (NOT) must be sent to the state office or Regional USEPA Regional Office.

This guide specification is to be used in the preparation of project specifications in accordance with ER 1110-2-1200 and ER 1110-1-8155.

Sacramento District shall utilize the District's Work Instruction 4-01-01 which provides more detailed information on the Permit requirements and specification development for the state of California. For other states, outside of California, within CESPCK jurisdiction, EP 1110-1-16 should be utilized. Comments and suggestions on this guide specification are welcome and should be directed to the Sacramento District's Stormwater Committee as described in the District Work Instructions.

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## PART 1 GENERAL

### 1.1 REFERENCES

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NOTE: Issue (date) of references included in project specifications need not be more current than provided by the latest change (Notice) to this guide specification.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

#### AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 4439	(1997) Standard Terminology for Geosynthetics
ASTM D 4491	(1996) Water Permeability of Geotextiles by Permittivity
ASTM D 4533	(1991; R 1996) Trapezoid Tearing Strength of Geotextiles
ASTM D 4632	(1991; R 1996)) Grab Breaking Load and Elongation of Geotextiles
ASTM D 4751	(1995) Determining Apparent Opening Size of a Geotextile
ASTM D 4873	(1995) Identification, Storage, and Handling of Geosynthetic Rolls

## 1.2 GENERAL

The Contractor shall implement an effective stormwater pollution prevention program using appropriate Best Management Practices (BMPs). Where applicable, the contractor shall implement the stormwater pollution prevention measures specified in this section 01356 in a manner which will meet the requirements of the National Pollution Discharge Elimination System (NPDES) permit. A vital component of the permit is the implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP is attached at the end of this Section. Paragraph 4 of this Section 01356 contains specific instructions on how to complete, certify, approve and implement the Storm Water Pollution Prevention Plan. The Best Management Practices (BMPs) to prevent storm water pollution are described in this Section 01356 and the SWPPP.

## 1.3 SUBMITTALS

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**NOTE:** Submittals must be limited to those necessary for adequate quality control. The importance of an item on the project should be one of the primary factors in determining if a submittal for the items should be required.

Indicate submittal classification in the blank space following the name of the item requiring the submittal by using "G" when the submittal requires Government approval. Submittals not classified as "G" will show on the submittal register as "Information Only". For submittals requiring Government approval, a code of up to three characters should be used following the "G" designation to indicate the approving authority; codes of "RE" for Resident Engineer approval, "ED" for Engineering approval, and "AE" for Architect-Engineer approval are recommended.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

- Certified Storm Water Pollution Prevention Plan (SWPPP) G  
(paragraph 4.0)
- Certification of type & source of material used for erosion controls or wattles. (paragraph 2.2.2, 2.3.4)
- Manufacturer's installation instructions for erosion controls, silt fences and fiber rolls. (paragraph 2.1.3, 2.2.5, 2.3.8)
- Proof of Having Erosion Sub-contractor on contract (paragraph 1.4.6)

The contractor shall submit for government approval a completed and certified SWPPP within 14 days after the receipt of the Notice To Proceed.

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 SPECIAL NOTE: Paragraph 1.4 and 1.5 provide the implementation requirements necessary to reduce stormwater pollution risk. Most of these requirements originate from the San Francisco RWQCB Erosion and Sedimentation Control Field Manual, 3<sup>rd</sup> Edition, July 1999. It should be noted that "straw wattles" is a specific type of "fiber rolls" but rice, wheat, etc may be used in place of straw. On certain projects, silt fences may be applicable and preferred over fiber rolls and therefore the fiber roll specification should be deleted.  
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#### 1.4 IMPLEMENTATION REQUIREMENTS DURING THE NON-RAINY SEASON.

- 1.4.1 The non-rainy season in the State of California is between April 1 to September 30.
- 1.4.2 Any construction work being conducted during the non-rainy season which disturbs soil (5 acres or more) shall have a sedimentation control BMP such as silt fences or fiber rolls per paragraph 1.7 installed at the downslope activity boundary. Erosion control BMPs may not be required if vegetation will be fully established prior to the rainy season. If vegetation will not be established prior to the rainy season, then the contractor shall ensure erosion control BMPs will be installed at all potential pollution sources by Oct 1.
- 1.4.3 Established vegetation must meet the stabilization requirements described in Section 7 of the attached SWPPP.
- 1.4.4 All requirements of the NPDES Permit and attached SWPPP shall apply during the non-rainy season except for the erosion control BMPs as noted in paragraph 1.4.2.
- 1.4.5 The contractor shall be aware that there are costs associated with implementing the SWPPP in order to maintain compliance with the Permit. This includes the installation of Housekeeping BMPs (i.e. keeping street exits clean, establishing concrete wash areas, protecting stormwater drain inlets, etc ), General Site and Material Management BMPs (i.e. controlling imported material, etc), Bi-weekly Inspection requirements, Maintenance requirements and all other requirements specified in the SWPPP.
- 1.4.6 During the rainy season, erosion control sub-contractors are usually booked solid and materials for erosion and sedimentation controls may become depleted. In order to meet the requirement of the Permit and the 14 day requirement of paragraph 1.5.3, the contractor shall contract any necessary erosion control sub-contractors and stockpile all necessary materials required by this section 01356 prior to and throughout the rainy season. Proof of an erosion control subcontractor for material and/or services shall be submitted to the government by August 1 of each year in which contractual performance is required, unless the Notice to Proceed is given after July 17. If the Notice to Proceed is given after July 17, these submittals shall be made within 14 days of the Notice to Proceed and then, if contract performance is required in subsequent years, annually thereafter by August 1.

- 1.4.7 The contractor is responsible for preventing stormwater pollution in the event of an unusual rain event during the non-rainy season.

1.5 IMPLEMENTATION REQUIREMENTS DURING THE RAINY SEASON

- 1.5.1 The rainy season in the State of California is between Oct 1 and March 31.
- 1.5.2 All requirements of the NPDES Permit and the SWPPP shall apply during the rainy season without exception. This includes the installation of Housekeeping Best Management Practice (BMPs), General Site and Material Management BMPs, Bi-weekly Inspection requirements, Maintenance requirements and all other requirements specified in the SWPPP.
- 1.5.3 Any disturbed soil area that will remain exposed for more than 14 days during the rainy season shall be provided with an erosion control BMP. The only exception to the 14 day requirement during the rainy season is for an area where heavy construction work is still in progress. Adequate control of runoff water and siltation must be exercised in active work areas allowed during the rainy season. The temporary erosion BMPs shall be in accordance with paragraph 1.6 and the certified SWPPP. Permanent erosion controls shall be the specified vegetation described in Section 2271.
- 1.5.4 During actual construction, it may not be practical to install erosion control BMPs. However, sedimentation control BMPs shall be installed at the downslope boundary at the beginning of soil disturbing activities. The sedimentation BMPs shall be in accordance with paragraph 1.7 and the certified SWPPP.
- 1.5.5 The SWPPP requires that the contractor provide a schedule to install all erosion and sedimentation control BMPs. The schedule to install BMPs must meet the implementation requirements of paragraph 1.5.3 and 1.5.4. This schedule shall also be made available to federal, state and local government representatives on site. Adherence to the BMP installation schedule that is attached to the certified SWPPP is required.
- 1.5.6 During construction in the rainy season, the contractor is also required to perform due diligence to prevent stormwater pollution. To the greatest extent possible, the following due diligence actions are required by the contractor:
- (a) Minimize the length of time that soil is left exposed. 14 days is the maximum but 5 days or less should be accomplished whenever possible.
  - (b) Reduce the total area of exposed soil. Whenever possible, divide the site into sections and work one section at a time.
  - (c) Protect all receiving waters previously identified and all new receiving waters that are discovered during construction. This includes drainage channels, creeks and natural watercourses, water bodies, and agricultural ditches leading to any of the preceeding. Ensure Sedimentation BMPs are installed to protect all of these areas.
  - (d) Monitor before and after each rain event, and at least

daily during rain events that exceed one day (24 hours) in duration. The Inspection and maintenance requirements are specified in the SWPPP.

(e) Make every attempt to stabilize the disturbed soil at least 48 hours before an incoming major storm. If necessary, stop all construction work in order to have the necessary erosion or sedimentation BMPs installed.

(f) Do not rely solely on sediment control BMPs during the rainy season. Sedimentation control is not the primary measure of protecting the water. Erosion control is the primary compliance measure.

## 1.6 Erosion Controls or Best Management Practice (BMP)

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NOTE: A Drainage Drawing should be attached to the SWPPP. This may also show the location of the Erosion Control BMPs if this is practical during the design phase. Use a grid system, or other means of defining portions of large projects. The various BMPs should be color coded. The Erosion Control BMPs should ensure that the maximum area of existing vegetation is preserved where attainable and disturbed areas are stabilized. Alternate Erosion Control BMPs to tackified straw are: [temporary seeding,] [mulching,] [geotextiles,] [sod stabilization,] [vegetative buffer strips,] [erosion control matts,] [preservation of all existing mature vegetation,] [etc]. The following specification assumes tackified straw will be the erosion control BMP and the slope is less than 50% (2 horiz : 1 vert). For slopes greater than 50%, the specification must be changed to specify a fabric blanket or other suitable BMP. The specification must be revised if tackified straw will not be utilized and another erosion control BMP is selected. The selection process shall utilize the technical guidelines described in Sacramento District's Work Instruction to prevent stormwater pollution. It should be noted that crimping or punched straw is superior to tackified straw if the ground is uniform and there are a minimum of existing trees or existing vegetation. If this is the case, the lead designer should remove the tackified straw specification below and specify crimping and punching the straw (see paragraph 2.2.4) The estimated number of square feet of punched or tackified straw may be specified in the Contract Line Item Bid Schedule. The Bid Schedule will provide for the contractor's price as either a lump sum or by a specified quantity such as 10,000 square ft including all installation labor, material, tools and equipment, and all incidentals. The lead designer should consult the Project Manager during the stormwater meeting to determine whether a lump sum or a quantity of tackified or crimped straw should be specified in the Bid Schedule.

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1.6.1 The Erosion Control Best Management Practice (BMP) to protect disturbed soil areas from erosion during the rainy season shall be tackified straw for slopes 50% (2 horiz : 1 vert) or less. The detailed specification for tackified straw is provided in paragraph 2.2.

1.6.2 The location of the Tackified Straw is illustrated in the Drainage Map or plans that are attached to the SWPPP prior to award of

contract.

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NOTE: On some projects, it may not be practical to illustrate the location of the tackified or crimped straw on a drawing. In this case, paragraph 1.6.2 shall be deleted and this action shall be assumed by the contractor by changing the word "update" to "illustrate and update" in paragraph 1.6.3.

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1.6.3 The contractor shall use a color marker pen to update the location of erosion control BMP on either the existing Drainage Map or provide another map if necessary. The marked up color maps illustrating erosion control BMPs shall be attached to the SWPPP.

1.6.4 On his daily CQC Report, the Contractor shall record the dates when the major grading activities occur, (e.g., [clearing] [and grubbing,] [excavation,] [embankment,] [and] [grading]); when construction activities temporarily or permanently cease on a portion of the site; and when stabilization practices are initiated.

## 1.7 Sedimentation Control or Best Management Practices

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NOTE: The Drainage Drawing that is attached to the SWPPP should show the location of the Sedimentation Control BMPs if this is practical during the design phase. The Sedimentation Control BMPs should ensure that existing vegetation is preserved where attainable and disturbed areas are stabilized. Alternate Sedimentation Control BMPs to silt fences and fiber rolls are: [Diversion dikes,] [Check dams,] [subsurface drainage systems,] [PVC drainage piping system,] [Storm Drain Inlet protection,] [rock outlet protection,] [coir rolls] [Sedimentation traps and ponds or basins] [Gabions] [Reinforced retaining walls to dissipate water velocity]. Other specialized BMP products include dirt bags or filters to remove silt from ponded or stored water. The following specification assumes fiber rolls and silt fences will be utilized. This must be revised if fiber rolls or silt fences will not be utilized and another sedimentation control BMP is selected. The selection process shall utilize the technical guidelines described in Sacramento District's Work Instruction (Engineering Memorandum XX). If fiber rolls are not applicable to the project, the applicable paragraphs and words in certain paragraphs on fiber rolls shall be deleted. The alternate BMPs, such as coir rolls or sedimentation traps as suggested above, should then be specified. "Straw wattles" is a specific type of fiber rolls and straw wattles and fiber rolls may be used interchangeably. Secondary protection such as gravel bags and siltbags shall be used around and in drop inlets whenever there may be water/washdown water entering stormwater inlets. These secondary protection systems shall be specified in Section 14 of the attached SWPPP. The estimated number of linear feet of fiber rolls or silt fences may be specified in the Contract Line Item Bid Schedule. The Bid Schedule will provide for the contractor's price either as a lump sum or by a specified quantity such as 1000 linear ft including all installation labor, material, tools and equipment, and all incidentals. The lead designer should consult the Project Manager during the stormwater meeting on whether this specification should be a lump sum or a specific quantity in linear feet in the Line Item Bid Schedule.

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1.7.1 The Sedimentation Control BMP to protect downstream bodies of water or storm drain inlets during the rainy and non-rainy season shall be silt fences or fiber rolls. The detailed specification for silt fences is provided in paragraph 2.1. The detailed specification for fiber rolls is provided in paragraph 2.3

1.7.1 The potential sedimentation sources and sedimentation BMPs are located and illustrated in the Drainage Map or plans that is attached to the SWPPP prior to award of contract.

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NOTE: On some projects, it may not be practical to illustrate the location of sedimentation BMPs on a drawing. In this case, paragraph 1.7.2 shall be deleted and this action shall be assumed by the contractor by changing the word "update" to "illustrate and update" in paragraph 1.7.3.  
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1.7.2 The contractor shall use a color marker pen to update the location of sedimentation control BMPs on either the existing Drainage Map or provide another map, if necessary. The marked up maps illustrating the sedimentation control BMPs must be attached to the SWPPP and submitted to the government for review and approval.  
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1.7.3 The Contractor shall provide adequate sedimentation control measures to prevent any silt resulting from ineffective erosion controls. Silt fences or fiber rolls or other BMPs, shall be properly installed to effectively retain sediment immediately after completing each phase of work where erosion would occur in the form of sheet and rill erosion (e.g. clearing and grubbing, excavation, embankment, and grading). Final removal of silt fence barriers or fiber rolls shall be upon approval by the Contracting Officer. At a minimum, the location of sedimentation BMPs should be as follows:

- a. Along the downhill perimeter edge of all areas disturbed.
- b. Along the top of the slope or top bank of drainage ditches, channels, swales, etc. that traverse disturbed areas.
- c. Along the toe of all cut slopes and fill slopes of the construction areas.
- d. Perpendicular to the flow in the bottom of existing drainage ditches, channels, swales, etc. that traverse disturbed areas or carry runoff from disturbed areas. Rows shall be spaced [a maximum of [\_\_\_\_\_] feet apart] [as shown on the drawings].
- e. Perpendicular to the flow in the bottom of new drainage ditches, channels, and swales. Rows shall be spaced [a maximum of [\_\_\_\_\_] feet apart] [as shown on the drawings].
- f. At the entrance to culverts that receive runoff from disturbed areas.
- g. Additional BMPs measures should be identified by the contractor prior to and included in the bid.



## PART 2 PRODUCTS

### 2.1 DETAILED SPECIFICATION FOR SILT FENCES FOR SEDIMENTATION CONTROL

#### 2.1.1 Filter Fabric, Silt fence

The geotextile shall comply with the requirements of **ASTM D 4439**, and shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. The filament shall consist of a long-chain synthetic polymer composed of at least 85 percent by weight of ester, propylene, or amide, and shall contain stabilizers and/or inhibitors added to the base plastic to make the filaments resistance to deterioration due to ultraviolet and heat exposure. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 to 120 degrees F. The filter fabric shall meet the following requirements:

#### FILTER FABRIC FOR SILT SCREEN FENCE

PHYSICAL PROPERTY	TEST PROCEDURE	STRENGTH REQUIREMENT
Grab Tensile	<b>ASTM D 4632</b>	100 lbs. min.
Elongation (%)		30 % max.
Trapezoid Tear	<b>ASTM D 4533</b>	55 lbs. min.
Permittivity	<b>ASTM D 4491</b>	0.2 sec-1
AOS (U.S. Std Sieve)	<b>ASTM D 4751</b>	20-100
Color	Use of "safety orange" colored silt fence should be used to increase visibility for high traffic areas.	

#### 2.1.2 Silt Fence Stakes and Posts

The Contractor may use either wooden stakes or steel posts for fence construction. Wooden stakes utilized for silt fence construction, shall have a minimum cross section of 2 inches by 2 inches when oak is used and 4 inches by 4 inches when pine is used, and shall have a minimum length of 5 feet. Steel posts (standard "U" or "T" section) utilized for silt fence construction, shall have a minimum weight of 1.33 pounds per linear foot and a minimum length of 5 feet. Silt fences shall be erected with the posts on the downstream side.

2.1.3 The contractor shall provide the material, labor, and all incidentals associated with the installation of silt fences. Maintenance and repairs shall be performed by the contractor in accordance with the SWPPP. Prior to installation, the manufacturer's installation instructions shall be provided to the government field representative for inspection purposes.

#### 2.1.4 Identification Storage and Handling

Filter fabric shall be identified, stored and handled in accordance with **ASTM D 4873**. Silt fences should be stored to provide protection from UV sunlight, animal or insect damage, mold or water damage, theft and vandalism.

### 2.2 DETAILED SPECIFICATION FOR TACKIFIED STRAW FOR EROSION CONTROL

2.2.1 The tackifying material shall be non-toxic, biodegradeable, environmentally friendly, non-corrosive and contains no asphaltic emulsion. Tackifying material must be proven non-toxic to wildlife, including aquatic life. A commercial grade tackifier or binder (such as Mulchtack 41 by Soiloc, or RMB plus by Reinco, or equivalent tackifier) shall be used to solidify the straw into a protective erosion covering.

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NOTE: Technical References for Tackified Straw products -

<http://www.reinco.com/html/Tackifier/tack.html#RMB>

<http://www.herculesenvironmental.com/erosion.html>

Other vendors are located at <http://www.ieca.org/>

IMPORTANT COORDINATION NOTE: Section 2271 (Seeding) should be reviewed and coordination with the Landscape Design Section must be conducted to determine if seeding is necessary prior to installing tackified straw, coordinate timing issues, and address compatibility issues such as type of straw, rice, oat, etc.

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2.2.2 The straw, rice, oat wheat used shall originate from the State of California. NOTE: Any imported material may require approval from the Department of Agriculture or the State of California for pest and disease control. Barley straw shall not be used. Straw shall be seed free.

2.2.3 The mixing of straw mulch, tackifying material and water shall be applied at the rate in accordance with the manufacturer's instructions. The straw blowing equipment, labor, material, and all incidentals shall be provided by the contractor. (NOTE: Tackifier may or may not be mixed with the straw. In a 3 step application, hydromulch plus seed is sprayed, then straw is blown as mulch, then tackifier is sprayed to form a surface matrix to resist displacement.)

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NOTE: Paragraph 2.2 should be modified if the project requires 100% crimping or 100% use of a tackifier. Some projects may not require the use of a straw tackifier and therefore any reference to the tackifier specification should be deleted.

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2.2.4 The straw shall be crimped in place by crimping equipment or spiked rollers. The crimping equipment, labor, all incidentals shall be

provided by the contractor. Tackifier shall be used on slopes steeper than 50% (2 horizontal to 1 vertical) and crimping may be used on slopes less than 50%.

- 2.2.5 Prior to installation, the manufacturer's installation instructions shall be provided to the government field representative for inspection purposes. To increase erosion control, vertical track-walking of all slopes with tackified straw is required.
- 2.2.6 After installation, the tackified straw shall be visually inspected for any bare or thin areas by the SWPPP coordinator and a government field representative. Tackified straw shall be reapplied if any major bare areas or thin areas can be visually detected during a walk-thru. Maintenance of the tackified straw which may require reapplication shall be performed by the contractor in accordance with the SWPPP.

## 2.3 DETAILED SPECIFICATIONS FOR FIBER ROLLS FOR SEDIMENTATION CONTROL

- 2.3.1 Fiber rolls are tubes of rice straw or wheat or oat straw encased in either UV degradable plastic netting or 100% biodegradable burlap.
- 2.3.2 The wattles shall be approximately 8 to 12 inches in diameter, 20 to 35 feet long, and weigh between 25 to 45 lbs per roll.
- 2.3.3 The plastic netting or burlap must be environmentally friendly and must degrade in such a way that there will be no adverse risk to small animals, aquatic life or plant life.
- 2.3.4 The straw, rice, oat, or wheat used shall originate from the State of California. NOTE: Any imported material shall require approval from the Department of Agriculture or the State of California for pest and disease control. Barley straw shall not be used. Straw shall be seed free.
- 2.3.5 All shipping costs, material costs, installation labor, and all incidentals shall be provided by the contractor.
- 2.3.6 Fiber Rolls manufactured by California Straw Works, or Earth-Savers, or any other manufacturer that meet paragraphs 2.3 are acceptable.

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NOTE: Technical References for Fiber Rolls -

[www.strawwattles.com](http://www.strawwattles.com)

[www.earth-savers.com](http://www.earth-savers.com)

Other vendors are located at <http://www.ieca.org/>

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- 2.3.7 All installation shall be in accordance with the manufacturer's recommendations. If there are no manufacturer's recommendations, then installation shall be as follows: The ends of wattles shall be abutted to each other snugly. Stakes should be from 2x4 lumber sawn diagonally. Lengths of stakes should be 2.5 feet for cut slope

areas. Spacing of stakes should be at three foot centers.

- 2.3.8 Prior to installation, the manufacturer's instructions shall be provided to the government field representative for inspection purposes.
- 2.3.9 After installation, fiber rolls shall be visually inspected by the SWPPP coordinator and a government field representative. Restaking or reinstallation may be required if installation is not in accordance with the manufacturer's recommendations or areas are found to be unprotected. Maintenance of the fiber rolls shall be performed by the contractor in accordance with the SWPPP.
- 2.3.10 Storage and stockpiling of fiber rolls shall be in accordance with the manufacturer's installations. This should also include protection from UV sunlight, mold or water damage, animal and insect damage, theft and vandalism.

### PART 3 EXECUTION

#### 3.1 INSTALLATION OF SILT FENCES

Silt fences shall extend a minimum of 16 inches above the ground surface. Filter fabric shall be from a continuous roll cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter fabric shall be spliced together at a support post, with a minimum 6 inch overlap, and securely sealed. A trench shall be excavated a minimum of 4 inches wide and 4 inches deep on the upslope side of the location of the silt fence. The trench shall be backfilled and the soil compacted over the filter fabric. Silt fences shall be installed in accordance with the manufacturer's instructions or as approved in writing by the government. Some silt fence material is marked with a line to indicate anchoring depth. Silt fences shall be maintained by the contractor continuously from the time it is installed until removal is authorized by the Government. Silt fences shall be removed upon approval by the Contracting Officer.

#### 3.2 INSTALLATION OF TACKIFIED STRAW

See paragraph 2.2 for installation of tackified straw. Generally, the installation of tackified straw must be in accordance with the manufacturer's recommendations (i.e tackifying material). See paragraph 2.2.3 for a specific three step operation procedure involving seeding requirements.

#### 3.3 INSTALLATION OF FIBER ROLLS

See paragraph 2.3 for installation of fiber rolls. Generally, the installation of fiber rolls must be in accordance with the manufacturer's recommendations (i.e. fiber rolls).

#### 3.4 MAINTENANCE

The Contractor shall maintain the temporary and permanent vegetation, erosion and sediment control measures, and other protective measures in good and effective operating condition by performing routine inspections to

determine condition and effectiveness, by restoration of destroyed vegetative cover, and by repair of erosion and sediment control measures and other protective measures. If the chosen BMPs are not doing an adequate job, the system must be immediately upgraded or amended to insure that it does work. The contractor is responsible for maintenance of the all BMPs (erosion control, sedimentation control, house keeping BMP, etc) until the contractor receives a memorandum of termination per paragraph 4.7. Maintenance includes repairing or replacement from damage due to UV exposure, wind, vandalism, theft, heavy rainstorms, high water events, etc. The following procedures shall be followed to maintain the protective measures.

#### 3.4.1 Silt Fence Maintenance

Silt fences shall be inspected in accordance with the attached SWPPP. Any required repairs shall be made promptly. Close attention shall be paid to the repair of damaged silt fence resulting from end runs and undercutting. Should the fabric on a silt fence decompose or become ineffective, and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits shall be removed when deposits reach one-third of the height of the barrier. When a silt fence is no longer required, it shall be removed and the immediate area occupied by the fence shall be restored by soil compaction and grading (using hand tools) and reseeded to restore vegetation.

#### 3.4.2 Tackified Straw Maintenance and Inspection Requirements

All Maintenance and Inspections Requirements for tackified straw shall be in accordance with paragraph 2.2 and the attached SWPPP. Any bare areas discovered during the inspection should be protected by reapplication of tackified straw. Eroded areas shall be repaired and adequate protection placed. This may require fiber blankets in place of straw.

#### 3.4.3 Fiber Rolls Maintenance and Inspection Requirements

All Maintenance and Inspection requirements for fiber rolls shall be in accordance with paragraph 2.3 and the attached SWPPP. Any disturbed or damaged fiber rolls shall be repaired or replaced.

### 4.0 INSTRUCTIONS FOR COMPLETING, CERTIFYING, APPROVING AND IMPLEMENTING THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

- 4.1 The SWPPP is attached immediately after this Section. The attached SWPPP is necessary to meet the requirements of the General Permit. The General Permit is attached to the SWPPP.
- 4.2 The contractor shall review the attached SWPPP for applicability and adequacy. Deficiencies in the SWPPP not brought to the government's attention in writing prior to certification by the contractor shall be corrected by the contractor and submitted for approval, at no additional cost to the Government.
- 4.3 There is a separate contract line item for adequate erosion and sedimentation control BMPs and NPDES permit compliance. Costs incurred for the initial review of the SWPPP and revisions that must be made

during the contract, are incidental to ensure adequate erosion control and sedimentation control.

- 4.4 The contractor shall complete the information required by provision 2 in the SWPPP and then certify the SWPPP.
- 4.5 The certified SWPPP shall be submitted for government approval. Government approval must be obtained prior to any soil disturbing activity. After government approval, compliance by the contractor with all provisions of the SWPPP and the General Permit is required.
- 4.6 The contractor shall be aware that noncompliance with the contract specification Section 01356 and the SWPPP may trigger enforcement actions by the Regional Water Quality Control Board against the Corps of Engineers. If a notice of violation, a cease and desist order, or an administrative civil liability is issued and is caused by the contractor's noncompliance with the contract specifications or the SWPPP, the Corps of Engineers may rate the contractor's overall performance as unsatisfactory and may seek such other relief for civil penalties and other costs and damages as may be otherwise permitted in this contract.
- 4.7 The contractor must receive a written memorandum from the government to terminate the contractor's obligation to the SWPPP and the stormwater pollution protection requirements of this Specification (Section 01356). The contractor's obligation to assure that the soil disturbance caused by his contract activities does not result in NPDES non-compliance is independent of other contract duration issues. Said obligation may not end after the performance period of the contract has transpired, but is considered a warranty item. The written memorandum is normally provided after final erosion vegetation is accepted per Section 2271. and there is no risk of stormwater pollution at the site.

NOTE: Terminating the contractor's obligation to the SWPPP normally occurs when the contract is completed; vegetation is fully established and a Notice of Termination (NOT) is submitted to the State Board; a new SWPPP is certified by another contractor; or NPDES permit compliance is assumed by a third party. A written memorandum is necessary to ensure continuity of Stormwater Pollution Protection.

ENCLOSURE TO SECTION 01356

- (1) STORMWATER POLLUTION PREVENTION PLAN